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Playing with/as Systems:
Short Paper, Discussion and Demonstration

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Abstract

Complex phenomena such as play, creativity or innovation are familiar, yet difficult to describe in a systematic manner. In this short article I propose six necessary conditions for any comprehensive description of play. Against this background I discuss my systems-theoretic, constructivist and practice-informed approach to play.

Keywords: cybernetics; distinctions; game studies; play; systems theory.

Play

Play is a complex and interesting phenomenon. It is a common experience, yet mysterious and paradoxical in nature. It is free but functional, frivolous but meaningful, cultural (Huizinga, 1955) but pre-human (Burghardt, 2005). From our early childhood we engage in play, but we are far from a firm understanding of it. Various disciplines such as psychology, sociology, anthropology, ethology, cognitive science and the humanities have made attempts to explain and conceptualize play through numerous conflicting theories (Ellis, 1973; Henricks, 2008). Play is also linked to wellbeing, creativity and innovation (Bateson & Martin, 2013). However, approaches that attempt to instrumentalize play have been met with mixed responses from the community of play thinkers and practitioners. Some argue that play should be regarded an autotelic activity, exercised for its own sake and not for any extrinsic purposes (Sicart, 2014). Yet designers of games and playful experiences[1] increasingly make use of experimental findings from psychology and cognitive sciences in order to aid them in creating compelling play experiences.

[1] There are various ways to draw distinctions between games (Salen & Zimmerman, 2003, pp. 70–83) and play (Salen & Zimmerman, 2003, pp. 300–311); for example, one can observe games as media that are particularly suited for forms of play to appear (Luhmann, 2000).

Descriptions

A fundamental theory that would be capable of describing these multiple facets of play currently does not exist. This has been problematized (Sutton-Smith, 1997), however, a solution has not been proposed so far. I argue that any comprehensive description of play needs to meet at least six conditions:

The first condition is an adequate level of abstraction. The description has to be abstract and general enough to cover the wide range of phenomena that are observable as play: free play between children; the ritual of a sports match; non-human (e.g., animal) play; the drama unfolding during a game of chess; metarules emerging from a multiplayer online battle; unpleasant, forced, and dark play (Mortensen, Linderoth, & Brown, 2015); or the experiential quality of a playful encounter between adults. These and many other phenomena have to be considered within a description of play. This high grade of abstraction requires a simple, universal foundation.

The second condition is sufficient complexity: the description has to be complex enough to account for the complexity of play. Note that this and the previous condition act in an antagonistic manner in that high abstraction pulls in the direction of simplicity, while complexity is required to describe a complex phenomenon. This rules out simplistic general explanations in the style of "play is getting rid of surplus energy" (Spencer, 1855) or "play is capitalism" (Nash & Penney, 2015). Throughout the nineteenth and twentieth centuries, many attempts to explain play by single causes have been put forward (Ellis, 1973), a development that can itself be observed as an artefact of the social sciences (Luhmann, 2009).

The third condition is that it has to account for paradoxical and contradictory findings. Is play a biological function to practice useful behavior (Pellis, Pellis, & Bell, 2010), or is it an ambiguous phenomenon that is best described in the form of seven cultural rhetorics (Sutton-Smith, 1997)? One way to make sense of such a contradiction is to include its context in the description. For example, one may choose to not only describe the conflicting observations, but also the observers that are involved. If animals play and if ethologists postulate play as a biological function, we can observe (and explain) this fact because ethology is based on functional explanations.[2] Therefore, a clash with, for example, Huizinga (1955), who posited play as deeply cultural, can be avoided if we carry the context with us. Again, we have relocated our observation from play itself to the scientific system, but we are aware of this shift of perspective. When we talk about a theory of play, we talk about a social system that is different from play, except when we are playing with the theory itself.

[2] Maturana and Varela (1980) calls this phenomenon "structural determinism."

From the previous remarks follows the fourth condition: a comprehensive description of play must be transdisciplinary. While acknowledging disciplinary foundations and methodologies, it has to provide a critical analysis of traditional approaches and must be able to transcend them (Punt & Blassnigg, 2013). This means that there cannot be all-encompassing, mono-thematic explanations that are rooted within a specific discipline or theory like biology, child development or Marxism.

The fifth condition is *Anschlussfähigkeit* (connective capability), a term borrowed from Luhmann's theory that denotes an important characteristic of social systems. Such a system, which operates with communication, ceases to exist when there are no follow-up events responding to previous events. A conversation dies, an institution gets closed, a theory forgotten. To enhance the probability that communication can continue, a comprehensive description of play must therefore ensure its connective capability (for example by continuously publishing articles). However, the necessity of further communication does not imply favorable assessment: critique—even blunt rebuff—is an appropriate continuation for descriptive discourses.

I propose a sixth condition: the description has to bridge theory and practice.[3] A description in this sense includes theory *and* practice: experimental methods, prototyping, play and game design practice, critique, computational models, speculative design, experiential aspects. Thus, a description can be a demonstration, an interaction and an experience. We can actually learn about play by playing.

Playful Systems

Through my PhD project "Designing Playful Systems,"[4] I am developing a description of play that is abstract, complex, observer-dependent, transdisciplinary, and that bridges theory and practice (Straeubig, 2016).

In particular, I observe play through the lens of distinctions (Straeubig, 2015), based on the conceptual work of Spencer-Brown (2008), Maturana and Varela (1980) and Luhmann (1996). Distinctions serve as the universal building blocks required by the first condition. Examples are system/environment, theory/practice, human/machine, play/work or external/internal purpose.

My approach draws heavily from the foundations of Luhmann's general systems theory. While Luhmann himself focused on working out a comprehensive theory of social systems, the general principles can also be applied to psychic and biological aspects of play. In other words, the theory can provide sufficient complexity to describe every aspect of play (second condition).

[3] For this reason, I have used the term 'description' instead of 'theory.'

[4] Available at http://www.cognovo.eu/project-9

Furthermore, Luhmann's theory acknowledges the fundamental role of the observer (third condition). The introduction of the observer into system-theoretic thinking took place during the second half of the last century with constructivist theories and the so-called "second-order" cybernetics (Glanville, 2002). At the price of binning notions of "objective truth," paradoxes and contradictions could be embraced from now on without an imminent collapse of the observing systems.[5]

In order to make sense of the multifaceted nature of play, I draw from the wide range of disciplines that have contributed to research in this area (Straeubig, Hsu, Oztop, & Taranu, 2016) as well as from the relatively young fields of play and game studies (Mäyrä et al., 2015). This approach observes those disciplines as social systems (subsystems of academia) while re-producing its own inherent mode of observation through autopoiesis (Bishop & Al-Rifaie, 2016). Metaphorically speaking, it provides a system-theoretic "glue" through the method of distinction (fourth condition).

At Off the Lip 2017, I gave a short talk about the topics of this paper and demonstrated a work-in-progress playful system, re-implemented from (Karpathy, 2014). The system is based on a reinforcement learning algorithm that draws distinctions from external rewards (Mnih et al., 2013). In this demonstration, theory and practice informed each other and both were exposed to the academic discourse (sixth condition). A playful system, I conclude, is one that draws distinctions for its own sake (Ghahramani, 2004), mixed with motivating rewards from the environment (Arulkumaran, Deisenroth, Brundage, & Bharath, 2017). This will be elaborated in future work, thus contributing to the connective capability (fifth condition) of this work. This article, the discussions during the conference, the presentation I delivered, the demonstration and the responses I received—all increase the surface for communicative acts to follow.

However, a final answer to the question of whether my approach to play is "200mmett200ssfähig" has to be established in the future.

Conclusion

Currently, the problem of how we make sense of complex phenomena that span brains, minds and social systems remains unsolved. If we aim to describe cognitive innovation "from cell to society" (Gummerum & Denham, 2014), if we want to give adequate accounts of creativity (Colton & Wiggins, 2012), we need a framework to do so. In this article, I have proposed six requirements for any comprehensive description of these phenomena and demonstrated how I apply those principles to play.

[5] Pickering (2011) offers explanations why cybernetics has lost in importance over time, but I believe that the final word concerning this issue has not been spoken yet.

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